I CLAIM:

1. A method for providing a system for high fidelity reproduction of the sound of a selected type of acoustic musical instrument, the method comprising:

(1) placing a first microphone at a selected location proximate to the acoustic musical instrument;

(2) playing the musical instrument to produce sounds as picked up by the first microphone and playing reference sounds of the instrument;

(3) comparing the sounds of the musical instrument as picked up by the first microphone with the reference sounds of the instrument; and

(4) designing a tailor-made equalizer for the first microphone to compensate for the differences between the sounds as picked up by the microphone and the reference sounds of the instrument.

2. The method of claim 1 wherein in said placing step, said first microphone is attached to the acoustic musical instrument.

3. The method of claim 1 wherein the step of comparing the sounds picked up by the first microphone with reference sounds of the instrument is made by listening directly to the two sounds.

4. The method of claim 2 wherein the step of comparing the sounds picked up by the first microphone with reference sounds of the instrument is made by listening directly to the two sounds.

5. The method of claim 1, further comprising repeating steps (1) through (3) using different musical instruments of the same type to determine adjustment ranges for sections of the equalizer designed in step (4).

6. A method for providing a system for high fidelity reproduction of the sound of a selected type of acoustic musical instrument, the method comprising:

(1) placing a first microphone to a selected location proximate to the acoustic musical instrument;

(2) positioning a reference second microphone at a listening site spaced from the acoustic musical instrument;

(3) playing the musical instrument to produce sounds as picked up by the first microphone, and to produce reference sounds of the instrument as picked up by the reference second microphone;

(4) making simultaneous first and second audio recordings of the sounds of the musical instrument as picked up by the respective first and second microphones;

(5) comparing the first and second audio recordings to determine the audio differences between the recordings; and

(6) designing a tailor-made equalizer for the first microphone to compensate for the differences of the first sound recording from the second sound recording.

7. The method of claim 6 wherein in said placing step, said first microphone is attached to the acoustic musical instrument.

8. The method of claim 6 wherein the listening site in step (2) is spaced from the instrument a sufficient distance to

permit the reference microphone to pick up an optimum sound quality of the instrument when positioned at that site.

9. The method of claim 7 wherein the listening site in step (2) is spaced from the instrument a sufficient distance to permit the reference microphone to pick up an optimum sound quality of the instrument when positioned at that site.

10. The method of claim 6, further comprising repeating steps (1) through (5) using different musical instruments of the same type to determine adjustment ranges for sections of the equalizer designed in step (6).

11. The method of claim 6 wherein the fourth step of making simultaneous first and second audio recordings preferably comprises making recordings on separate tracks of a multi-track recordable medium.

12. The method of claim 6 wherein the fifth step of comparing the first and second audio recordings comprises displaying acoustic waveforms of the first and second recordings; equalizing one of the first and second waveforms to substantially conform to the other waveform; and using the equalization values to design the tailor-made equalizer for the first microphone in step (6).

13. A system for high fidelity electronic reproduction of the sound of an acoustic musical instrument, the system comprising:

a microphone element adapted to be placed proximately to a preselected type of acoustic musical instrument; and

an equalizer having an input coupled to the microphone,

the equalizer including a particular arrangement of a predetermined minimum number of electronic filter circuits and controls, with optimized control ranges needed to compensate for differences in the electronic reproduction by the microphone element of sounds from the preselected type of acoustic musical instrument, compared with corresponding reference sounds from said type of musical instrument.

14. The system of claim 13 wherein the microphone element is further adapted to be attached to a preselected location on the musical instrument.

15. The system of claim 14 wherein said equalizer includes at least one digital filter.

16. A method for providing a system for high fidelity reproduction of the sound of a selected type of acoustic musical instrument, the method comprising:

(1) placing a first microphone at a selected location proximate to a first one of said acoustic musical instruments;

(2) placing a second microphone at a selected location from said first one of said acoustic musical instruments;

(3) playing said first one of said acoustic musical instruments to produce sounds as picked up by said first and second microphones;

(4) comparing with a processor signals from said first and second microphones; and

(5) creating a first digital filter algorithm with said processor to match the signal from said first microphone with the signal from said second microphone.

17. The method of claim 16 further comprising:

(6) repeating steps (1) to (5) with different sounds in step (3).

18. The method of claim 16 further comprising:

(6) applying said digital filter algorithm to the signal from said first microphone.

19. The method of claim 16 further comprising:

(6) repeating steps (1) to (5) for a second one of said acoustic musical instruments to create a second digital filter algorithm; and

(7) averaging the first and second digital filter algorithms.

20. The method of claim 19 further comprising:

(8) applying the averaged digital filter algorithm to a third microphone placed proximately to a third one of said acoustic musical instruments.

21. A system for high fidelity electronic reproduction of the sound of ~~an~~ acoustic musical instrument**s**, the system comprising:

a first microphone placed proximately to a first one of said acoustic musical instruments;

a second microphone placed at a selected location from said first one of said acoustic musical instruments; and

a processor adapted to be coupled to and compare signals from said first and second microphones and adapted to create a digital filter algorithm to match the signals from said first and second microphones.

22. The system of claim 21 further comprising:

A digital signal processor coupled to said first microphone and adapted to apply said digital filter algorithm to signals from said first microphone.

23. The system of claim 22 wherein said processor is further adapted to average digital filter algorithms for the first and a second type of said acoustic musical instruments.

24. The system of claim 22 further comprising:
A third microphone placed proximately to a third type of said acoustic musical instrument; and
A digital signal processor coupled to said third microphone and adapted to apply said averaged digital filter algorithm to signals from said third microphone.

25. An equalizer system comprising:
A low-pass filter adapted to receive an input signal;
A high-pass filter coupled in parallel to said low-pass filter and adapted to receive said input signal;
A summation device adapted to receive output signals from said low-pass filter and said high-pass filter.

26. The system of claim 25 ~~wherein said low-pass filter~~ and said high-pass filter are controlled independently from each other.

27. The system of claim 26 ~~wherein~~ said low-pass filter and said high-pass filter are each controlled by modifying at least one of a frequency and gain of said filters.